DEVELOPING A PHYSICAL FITNESS PROGRAM FOR EUREKA FIRE DEPARTMENT

EXECUTIVE LEADERSHIP

BY: Douglas J. Williams
Eureka Fire Department
Eureka, Kansas

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ABSTRACT

During a fire evolution in the spring of 2004, Eureka Fire Department officers observed that several firefighters showed signs of fatigue beyond normal expectation. The fire department did not have a fitness program in place at the time. At the next meeting of the fire department, an unannounced body composition test was completed on all firefighters. The results of this test indicated three out of five of those tested were overweight. This testing, in addition to the level of fatigue shown during training, indicated the need for a comprehensive fitness program.

This research was undertaken with three goals in mind. The first was an effort to define the components necessary to implement a wellness and fitness program that will provide for the health and safety of the fire- fighters. The second was to define the most appropriate type of fitness test to be administered. The third goal was to determine whether successful completion of the fitness test should be mandatory or incentive based.

Action research methodology was used to answer the following questions, as well as to develop components to outline the fitness program. The first question was to determine what specific components were needed to implement a comprehensive wellness and fitness program for a volunteer fire department. The second question addressed what type of annual physical testing should be utilized to determine the physical fitness of the department members. The final question asked whether the successful completion of the annual physical testing by the volunteers should be mandatory or incentive based.

The research was conducted by reviewing material at the fire science library of a local community college on administering body fat composition testing and then completing an analysis on each fire fighter. A literature review was completed to answer the research questions

and a questionnaire was sent out to volunteer departments to solicit information about existing programs.

The research showed sixty percent of the firefighters on Eureka Fire Department were overweight. The literature review revealed a fitness program should have five components: medical, physical, rehabilitation, behavioral health and data collection and reporting. It also revealed that a peer fitness trainer should be appointed. To provide annual testing, most of the information supported task oriented performance testing and recommend that it be mandatory to participate, but not mandatory to successfully complete the performance test. The questionnaire received little return and showed that most volunteer departments do not have well defined programs.

Eureka Fire Department should implement the components of fitness program as outlined in the Wellness / Fitness Initiative, use performance type fitness testing for the annual test, and use an incentive based program to promote successful completion of the testing.

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INTRODUCTION

During a recent Eureka Fire Department training exercise, the overall fitness of the firefighters was noted to be below an acceptable level. Several of the firefighters showed fatigue much earlier than was anticipated. Due to this concern, the department completed a body fat composition test on all of the department members in attendance at the next department meeting. These tests showed sixty percent of the department rated above the recommended percent of body fat, with several in the obese range. These results highlighted the fact that Eureka Fire Department did not have a defined wellness and fitness program for its fire personnel. The department initiated an infection control program and has provided immunizations for the past several years. However, the other facets of a wellness and fitness program that would meet the National Fire Protection Association (NFPA) standards, the combined International Association of Fire Chiefs (IAFC) / International Association of Firefighters (IAFF) combined *Wellness and Fitness Initiative,* or the National Volunteer Fire Council's (NVFC) *Health and Fitness Guide for the Volunteer Fire Service* have not been established.

The research is being conducted to develop a wellness and fitness program that will provide for the health and safety of the department personnel, to identify the type of annual fitness test to be administered, and to decide if the successful completion should be mandatory or incentive based.

The research is directed towards answering the following questions:

1. What components need to be implemented to provide a comprehensive wellness and fitness program for a volunteer fire department?
2. What type of annual physical testing should be implemented to determine the physical fitness of the department members?

3. Should the successful completion of the annual physical testing by the volunteers be mandatory to remain on the department or should it be incentive based?

Action research methodology was used to research the information and to develop a wellness and fitness program that is designed for a volunteer fire department.

BACKGROUND AND SIGNIFICANCE

The Eureka Fire Department is a volunteer department that provides services to the City of Eureka. In addition, the department has automatic and mutual aid agreements with Greenwood County to provide rescue and fire response to the entire county. Eureka is a rural community, with a population of three thousand five hundred. Even though it is small, Eureka is the largest community in the county and serves as the county seat. Greenwood County is primarily a rural county and, as such, the other small communities in the county have very little fire protection equipment. Greenwood County Fire District #1 is a grass and brush fire oriented department and has very minimal structure fire equipment. The nearest mutual aid assistance to Eureka from a larger community is thirty miles away. Stemming from the lack of structural fire protection equipment from others within the county, as well as the distance for mutual aid to be provided, the department has always understood the need to be self-supportive and not be reliant on assistance from neighboring departments. Due to this isolation, the need for physical fitness is vital for our personnel to endure long incidents without relief. Eureka Fire Department maintains a volunteer force of twenty-five firefighters and keeping the volunteers well trained and in good physical condition is of the utmost importance for their personal safety, as well as their dependability on all types of responses.

After a recent fire evolution during hot weather, officers observed that a significant number of the volunteers were exhausted beyond what they anticipated for the exercise. The physical condition of the firefighters was discussed and a decision was made to do a body fat composition test on the personnel at the next meeting. The results showed a majority of those tested were higher than normal on the percent body fat scale, with a concerning number in the obese range. With the statistics published by the NFPA and the National Institute of Occupational Safety and Health (NIOSH) continually showing cardiovascular disease as being the leading cause of firefighter deaths, the department is faced with two problems. The first and most important issue is the health and safety of the firefighters, the second is the need for the firefighters to be durable and dependable during a response. These issues are vital because of the department's lack of mutual aid on many incidents, requiring firefighters to remain on scene for several hours.

Very few volunteer fire departments in the nation have conducted annual fitness testing on their firefighters, and Eureka has been no exception. Eureka Fire Department has never required entry-level fitness evaluation or incumbent testing. The department leadership has recognized for some time the need for installing a wellness and fitness program and strides have been made in certain areas. An infection control program was initiated in 1993 that provides training on blood-borne pathogens, exposure reporting and counseling, as well as training for protective measures. This program also includes immunizations for Tetanus and Hepatitis B. While the need for physical fitness, specifically strength and endurance, appears self-evident for fire fighters, the task of determining and implementing a program to ensure this fitness has been difficult. Several obstacles have been encountered. Since Eureka is a small community, there has been no health or fitness club available and funding to purchase fitness equipment has not

been available. In addition to equipment costs, funding is necessary to implement the many other aspects of a wellness program, including: annual physicals, fitness testing, behavioral health counseling and rehabilitation. Recruitment and retention of volunteers are valid concerns due to the small pool of candidates available and due consideration must be given when determining acceptable entry and recumbent fitness levels.

Eureka Fire Department overcame one of these obstacles when it received a 2004 Assistance to Firefighters Grant to initiate a wellness and fitness program. The department is currently in the process of designing and implementing a comprehensive program based on collected data and analysis of relevant literature, legislation, standards and example of other departments. One area often discussed in the literature is the choice of annual testing for physical performance. Experts have yielded a number of opposing views on the most appropriate and effective type of test to be used. The tests mentioned are the United States Forestry Service's "Pack Test", the Firefighter Combat Challenge, Candidate Physical Agility Test (CPAT), and the fitness protocol of the IAFC/IAFF Wellness Fitness initiative. A second issue that provided many conflicting views is whether successful completion of the fitness test is mandatory to remain on the department. While a minimum acceptable fitness level is desired for its safety merit, it is a difficult standard to enforce in rural areas with a small volunteer pool.

Eureka's department has struggled for years to maintain the optimal force of twenty-five personnel. As such, the decisions must be made carefully as to the most appropriate components and testing procedures to be adopted and utilized. Choices must be made with emphasis on educating and obtaining consensus from department members to bring about an improved, safer department. A clear need has been detected for a wellness and fitness program to be developed and instituted for the safety, and job effectiveness, of the fire personnel.

This research project stems from participation in the National Fire Academy's Fire Officer Program, specifically dealing with course concepts from Executive Leadership. Participants are taught to continually evaluate and analyze their organizations and actions in an attempt to meet ever- changing needs and to continually strive to improve the effectiveness of their department. In regards to this project, assessment, analysis and problem solving techniques will be applied to a detected problem in fire fighter fitness levels, as well as in determining the most appropriate components and testing necessary for the specifics of Eureka Fire Department. This is a necessary project to allow the department to continue to improve and evolve into a better organization.

LITERATURE REVIEW

Each year it is demonstrated by the IAFF Death and Injury Surveys that firefighting remains one of the most dangerous occupations in the United States. Research has repeatedly shown the need for high levels of fitness to perform safely in the fire service. Much of the stress that is attributed to the profession is from shift work, long hours, sporadic high intensity work, strong emotional involvement, and exposure to human suffering. The three leading causes of death and occupational disease disability are heart disease, lung disease and cancer. The firefighting profession subjects personnel to high levels of stress, intense physical demands, and long term exposure to chemicals and infectious diseases which all contribute to the three leading causes of occupational death and disability, (IAFF/IAFC, 1997). These causes and conditions make it vital that all components are integrated into a fitness program. These include nutritional, counseling, stress management, medical screening, rehabilitation service, as well as others.

The need for fire departments to establish a Wellness and Fitness Program is well documented by several agencies. NFPA 1500 places ultimate responsibility for the fire department's health-related fitness program on the fire chief, (NFPA 1500, 2002). The NFPA has also set guidelines for the wellness and fitness of firefighters in its standard 1583. In this standard the NFPA requires that departments shall establish and provide a health-related fitness program that enables members to develop and maintain a level of health and fitness to safely perform their assigned functions, (NFPA 1583, 2000).

The issue of fire fighter fitness became such a concern to fire service organizations that the IAFF and the IAFC cooperated to form the IAFF / IAFC Joint Labor Management Wellness / Fitness Task Force (Task Force). The Task Force first met in December 1996 and agreed to address the issue of physical performance in the fire service. (IAFF / IAFC, 1997). The cooperative program that was compiled from these meetings placed the responsibility for wellness / physical fitness programs not only on management, but also on the union. "Without union input and cooperation in the process, members will not "buy in" to the program, " (IAFF / IAFC, 1997, pg 4).

Firefighting continues to be one of the nation's most dangerous and hazardous jobs with heart attacks, high physical stress levels, and sprains and strains all too common. In the past five years, the fire service has focused its attention on overcoming these issues by working to change the service's culture. The National Fire Protection Association (NFPA) has spent much time redeveloping and revamping their health and wellness standards, while career departments have been working with the International Association of Firefighters (IAFF) and International Association of Fire Chiefs (IAFC)

on a wellness initiative that began in 1997. Volunteer personnel also face similar risks when it comes to health and wellness. The nature of member time constraints and tight departmental budgets in the volunteer service often inhibits the creation of comprehensive health and wellness programs (NVFC, 2004). Volunteer firefighter fatalities accounted for 56 percent of all firefighting-related deaths from 1990-2000 (USFA, 2001). In 2002, stress was the leading cause of on duty deaths among volunteer firefighters, leading to the death of 26 firefighters. Heart attacks were the direct cause of death in 50 percent of on-duty volunteer firefighter fatalities (Leblanc, 2003). In both nature and cause, stress and heart attacks killed a higher percentage of on-duty volunteer firefighters than career firefighters, making clear the need for increased emphasis on cardiovascular health, physical fitness, and overall wellness in the volunteer service (NVFC, 2004). The greatest asset of the fire service is not its equipment, apparatus or stations but its personnel. It is through personnel that the fire department serves the public and is able to make a difference in their communities (IAFF / IAFC, 1997).

The steps to implementing a successful program begin with planning and education. Planning is the most important step to develop a vision and guidance for the implementation of the program. Education is the best option to counter concern among members about increasing their time requirements. Understanding the risks and consequences of not participating in a health and wellness program is a critical step in creating and implementing a successful program. When presented with comprehensive reasons why they should participate, many individuals often do so. No model plan exists that will work for all departments in all places, but there are model elements and core components that should be implemented, including: regular fitness screenings and medical assessments; fitness program with cardiovascular, strength, and flexibility training; behavioral modification including smoking, hypertension, diet, cholesterol,

diabetes; volunteer education; screening volunteer applicants. In a program where all of these components are combined, the volunteers pay more attention to their personal health and wellness, which will improve the department overall (NVFC, 2004).

Wellness is important for all uniformed personnel. The key test for all uniformed personnel, regardless of job assignment, is the ability to perform active fire fighting. The Fire Service Joint Labor Management Wellness / Fitness Initiative has five main components: medical; fitness; rehabilitation; behavioral health; and data collection and reporting (IAFF / IAFC, 1997). In addition to the five main components, the Wellness / Fitness Initiative also provided for a Peer Fitness Trainer (PFT). The program identifies firefighters who have demonstrated the knowledge and skills required to: design and implement fitness programs; improve the wellness and fitness of their departments; assist in the physical training of recruits and assist the broader community in achieving wellness and fitness (IAFF / IAFC, 1997).

In response to the reoccurring statistics of firefighter deaths and injuries, the NFPA released *NFPA 1583: Standard on Health-Related Fitness Programs for Firefighters*. NFPA states, “The purpose of this standard is to provide the minimum requirements for a health-related fitness program for fire department members who are involved in rescue, fire suppression, emergency medical services, hazardous materials operations, and related activities,” (NFPA 1583, 2000, 1.2.1). NFPA 1583 mandates the health-related fitness program shall include the following components: the assignment of a qualified health and fitness coordinator; a periodic fitness assessment for all members; a exercise training program that is available to all members; education and counseling regarding health promotion for all members; a process for collecting and maintaining health related fitness program data (NFPA 1583, 2000, 2.2).

The Joint Labor Management Fitness Initiative expand each of their main components of the program. The initiative stipulates for mandatory annual assessments for physical fitness and medical exams. It also requires individual medical clearance for firefighters prior to participating in fitness programs. The components of the joint initiative are listed in Table 1. As seen in Table 1, the wellness-fitness initiative has multiple elements, all of which are designed to be implemented as a whole. In the case of the volunteer service, it would be quite challenging to implement all of these at once(IAFF / IAFC, 1997).

Category	Components
Medical	• Physical Evaluation • Body Composition Evaluation • Laboratory Tests • Vision Tests • Hearing Evaluations • Spirometry • EKG • Cancer Screening • Immunizations and Infectious Disease Testing • Referrals • Data Collection
Fitness	• Medical Clearance • On Duty Time For Exercise • Equipment and Facilities • Exercise Specialists and Peer Trainers • Fitness Incorporated into Philosophy • Fitness Evaluations (aerobic capabilities, flexibility, muscular strength, muscular endurance) • Fitness Self Assessments • Exercise Prescriptions
Rehabilitation	• Need for Rehabilitation • Rehabilitation as a Priority • Establishment of a Medical Liaison • Physical Therapy Services • Clinical Pathways • Alternate Duty • Injury Prevention Program
Behavioral Health	• Professional Assistance • Nutrition • Tobacco Use Cessation • Employee Assistance Programs • Substance Abuse Intervention • Stress Management • Critical Incident Stress Management • Chaplain Services

The second part of the literature review focused on what type of an annual test to administer. There is a large area of variation on this subject. One of the main differences of opinion is whether to require physical fitness tests or competency based tests. Physical fitness tests and performance assessments are not the same thing, nor can they be used for the same purposes (Davies, 1995). A fitness test is health-based. People may be classified as unfit because they are overweight, hypertensive or exhibit other negative health factors that may affect performance, yet pass the performance test. Conversely, a person may be highly fit and fail the performance test, because the test is designed to determine if one can perform the necessary essential functions, not to establish a fitness level. In January, 1996, the IAFF called on its 225,000 – plus members to boycott the Combat Challenge, a fitness competition that had promoted timed, task-based tests for the fire service. The boycott escalated into violence before the issue finally was resolved in November. Like the union, the IAFC also recently took a stand on firefighter fitness, and early in 1997, announced its support of timed, task-based testing, as well as a "clear relationship between physical fitness and job retention" and "the development or minimum performance standards for fire suppression operations (Ostrow, 1997).

Under current federal employment legislation, the best prognosis for withstanding legal scrutiny is to use "essential function" testing, replicating as accurately as possible those physical tasks that are critical, arduous and frequently performed, thereby maintaining a fidelity to the job that is uninfluenced by skill or experience. The benefits of performance-based testing extend beyond a yes or no response, because they can include additional information regarding SCBA tolerance and related phobias that wouldn't otherwise be identified (Davis, 1997).

The forestry service has recently changed from the physical fitness five-minute step test to the pack test. The step test allows some unfit people out on the fire line. Others, more than

capable of doing the job safely, can't pass it to save their lives. There's a wide variety in heart rate response to exercise, according to Missoula Technology and Development Center's (MTDC) Brian Sharkey, and the step test under- predicts the fitness of those with high heart rate response. "It will also over predict some people. There are those who are climbing hills everyday and can't pass the step test" (Anderson, 1998, p. 2). In 1975 the step test became a condition of hire for firefighters with state and federal agencies and private contractors. The safety folks have known all along that the test failed to evaluate an important ingredient – muscular fitness. Sharkey says they wanted a test that uses a level of expended energy that's similar to what's needed on the fire line. They needed the test to be long enough to provide a physiological measure, a predictor of people's capabilities for long, hard work. Sharkey concluded that the pack test correlated to laboratory measures of both aerobic and muscular fitness and to performance on field tasks. The level – course pack test had no adverse impacts on subjects based on their age; 83 percent of those over 40 passed it. There were no adverse impacts – differences in who passed and who didn't – attributable to differences in height, weight, race or gender. There was no pattern for failure (Matthews, 1998). The support for the pack test is supported by most of the forestry fire crews. The Forest Service doesn't want the average joe out on the fire line anymore. And it isn't just the Washington office – surveyed fire crews and line officers complain about the unfit workers on the line. "There is some inherent bias in the pack test – it favors people who are in shape versus those who aren't," says Harry Croft, assistant director of planning for Fire and Aviation Management (Anderson, 1998, p. 2).

While there is wide support for the pack test, the IAFF continues to voice opposition to all time based performance testing. In commenting on two deaths attributed to the wildland firefighter pack tests IAFF spokesman Richard Duffy said, "The IAFF believes the use of a

physical performance testing program that largely relies on a task-based time test is extremely dangerous and has continued to oppose such tests" (Caspi, 2004, p. 6). In order to avoid such a situation, Sharkey recommends getting medical approval and building up physical fitness gradually over many months, because inactive people increase their risk of a heart attack by 56 times, he said. If firefighters are actually fit for the job, the Pack Test should be no big deal, he said. "It is perplexing that we still have people in active jobs who are inactive, or with heart conditions they don't disclose," he said. According to Sharkey's data, pass rates on the test exceed 90 percent in the United States, Canada, and Australia (Caspi, 2004, p. 13).

The effort to determine the physical performance requirements for fire fighters was not started by chance. Other forces made this a necessity, and certainly one with a high degree of influence, was the Americans with Disabilities Act (ADA). There is a consensus opinion among many authorities, that a content-validated test, known as a physical performance assessment test, is the only answer. Organizations must comply with the standards set out in NFPA 1500 and 1583, while complying with Americans with Disabilities Act (ADA), Civil Rights Act of 1991, and Age Discrimination in Employment Act 1996 (ADEA), (Day, 1996). There is a substantial need to make certain that the test is not discriminatory. Standards must be fairly applied and reasonably related to the job. This means that adjustment for age or sex is inappropriate for two reasons. The most obvious is that the job requirements are independent of who is performing the job. In other words, the fire doesn't care who's performing the suppression effort – the job is the job. The second is the Civil Rights Act of 1991, which bars adjustments in test scores that are unrelated to the job (Davis, 1997).

The third phase of the literature review was directed towards determining whether annual fitness testing should be mandatory or voluntary. One of the biggest roadblocks encountered will

be how to get employees to do things they perceive as unpleasant. The fitness issue is complicated not only by the specifics regarding implementation, but also by political divisions that exist in the fire service, most notably that between paid and non-paid departments, and between labor and management.

The IAFF, which represents paid firefighters, is committed to mandatory fitness programs and minimum fitness standards that it believes will protect the health and safety of its members. The National Volunteer Fire Council, on the other hand, the national voice for non-paid firefighters, prefers a more lenient approach to fitness because the ranks of volunteers sometimes are so thin that these departments can't afford to discourage potential members (Ostrow, 1997). It was agreed in the IAFF / IAFC Wellness and Fitness Initiative that any performance testing programs be non-punitive, which was defined as no loss of pay and a guided opportunity for remediation (IAFF / IAFC, 1998). While the programs of the NVFC, the IAFF and the IAFC propose that all testing for incumbent personnel be non-punitive, the standards for the wildland firefighters remain mandatory. There should be some criteria by which compliance is measured, and that mechanism is the ability to pass a job-related performance test on a periodic basis (Davis, 1997).

If punitive type testing is not going to be used, then what incentives do firefighters have to maintain a minimum level of fitness. Incentives may be of benefit in mandatory physical fitness programs by motivating members, improving the attitudes of members toward the program, and by promoting a member's pride in themselves for their accomplishments. It is important the incentive be considered of value by the members (Walterhouse, 1996). The department head must believe in and sanction the program, as well as provide financial support.

The amount of financial backing your department provides will impact the success of your program, but it should not preclude getting started (Lepere, 1997).

Reward programs are used in the business world to support safety programs. Incentives are part of the whole safety effort at Acme Brick. These range from monetary compensation to ball caps, jackets, special event tickets, meals, photos in the newspaper and company newsletter, to praise, and they are used to recognize the safety efforts of employees on a monthly or quarterly basis. Bonuses are paid quarterly to employees who have no lost-time accidents in their department, and annual recognition is also given (Fernberg, 1998). In order to be accepted, participation must occur from the top management on down. Employees will resent the program if some individuals are excused from participating. Rewards and incentives should not be given out just for participating, but should be built into the fitness program as a way of acknowledging progression. Participants should show a definite and measurable progression to receive benefits, or they should be obtained through honest effort and a desire to improve (Lepere, 1997).

PROCEDURES

The initial research for this project was done at the Butler County Community College Library to obtain procedures on performing body fat composition testing. After finding a method to test for percentage of body fat, with equipment that was readily accessible to the fire department, the firefighters in attendance at the next meeting were tested. The testing procedure used is outlined in Appendix A of the Fire Service Joint Labor Management Wellness / Fitness Initiative. These tests were performed without any advance notice to prevent individuals from intentionally avoiding the evaluations. After the tests were administered and the figures were

compiled, the results were evaluated. The results showed three out of five of the fire fighting volunteers placed in the overweight category.

Research was conducted at the Learning Research Center on the National Fire Academy campus. In an effort to gain as much information as possible, all types of sources were reviewed including fire service periodicals and journals, Executive Fire Officer research papers, emergency management periodicals and military journals. These sources were reviewed in an effort to find any resources on fitness programs, physical fitness testing and the application of those tests and programs.

Further research was conducted on NFPA guidelines at the Eureka Fire Department library of NFPA standards and by accessing online information from the National Volunteer Fire Council and the IAFC.

A questionnaire (Appendix A) was developed to solicit information from other volunteer fire departments in Kansas and surrounding states. The purpose of the questionnaire was to gather any information on wellness / fitness programs that have been developed and implemented in other departments. The questions were designed to solicit information particularly regarding exiting programs, the type of fitness testing used and the type of tool used to require or encourage participation. Fifty of the questionnaires were sent out. Only nine of the surveys were returned. With the limited number of the responses received, the data was limited, however, the responses were reviewed for any successful ideas or programs.

One limitation of the research was the low percentage of responses from volunteer departments. This low response on the questionnaires forced the project to be heavily reliant on the literature search.

RESULTS

The results of the first part of this research revealed that over sixty percent of the firefighters on the Eureka Fire Department were overweight. This was determined using the test for percentage of body fat, which is outlined in Appendix A of the Joint Labor / Management Wellness and Fitness Initiative. The testing done on the firefighters was completed at a regular fire meeting and without advance notice.

A questionnaire was sent out to fifty volunteer fire departments in Kansas, Missouri and Oklahoma. Out of the fifty surveys sent out, only nine were returned. Of the nine responses returned, none of the departments offered any type of annual physicals. Two departments offered their firefighters free passes to the community owned fitness center, three had various amounts of weight training equipment, two had a treadmill, and one had an exercise bicycle.

The responses received in correlation to question one, none of the departments offered any type of annual medical evaluations or structured physical fitness programs. A few provided some equipment or fitness center memberships. I was unable to get any guidance on the components that should be involved in the fitness program from these surveys.

The questions asked in reference to research questions two and three received no responses. None of the departments surveyed had any type of annual physical fitness testing. Since they did not do any testing, they did not have any pass or fail standards. By not having any testing, they did not require or give incentives to promote the program.

The results of the literature review emphasized the need for establishing a physical fitness program and listed the components that are necessary. The NVFC listed the components of a fitness program to include: regular fitness screenings and medical assessments; fitness program with cardiovascular, strength, and flexibility training; behavioral modification including

smoking, hypertension, diet, cholesterol, diabetes; volunteer education; and screening volunteer applicants. The Fire Service Joint Labor Management Wellness / Fitness Initiative has five main components to their program: medical; fitness; medical, fitness injury rehabilitation; behavioral health; and data collection and reporting. The Initiative also provided for a Peer Fitness Trainer. NFPA 1583 lists five components in their program: the assignment of a qualified health and fitness coordinator, periodic fitness assessments for all members, an exercise training program that is available to all members, education and counseling regarding health promotion for all members, and a process for collecting and maintaining health related fitness program data. From the literature review, it was determined to implement the program components from the Fire Service Joint Labor Management Wellness / Fitness Initiative (Appendix B).

The solicited responses for research question two did not provide any data. None of the departments that responded to the questionnaire had an annual fitness testing program. The literature review listed different types of testing. The Wellness / Fitness Initiative annual fitness testing provides for testing in the areas of aerobic capacity, flexibility, muscular strength and muscular endurance. NFPA 1583 lists all of the same components in its annual fitness assessment as the Wellness / Fitness Initiative, but includes body composition testing to the program. These both are physical fitness assessments. The Forestry service uses a physical performance test called the “Pack Test”. The “Pack Test” is a performance test that requires completion of a three mile walk in forty-five minutes while wearing a forty-five pound weight vest. The literature review listed numerous reasons and support for performance testing over fitness assessments. The program that will be implemented for Eureka Fire Department will incorporate the Pack Test as the annual fitness testing standard.

The questionnaires did not yield any information in regard to mandatory fitness requirements or incentive based compliance. None of the departments that responded gave annual tests, so no results were obtained from them. The literature review repeatedly reinforced the need for mandatory fitness testing participation, but the programs by the NFVC and the IAFF both stipulated that the testing should be used for personal review and compared to past results to provide each firefighter with a program to improve. The IAFF has held its belief that timed event testing is not safe. If an incentive based program is to be successful it is essential the incentive be considered of value by the firefighters. The department head must believe in and provide support as well as financial backing. The incentives can range from monetary compensation to ball caps, jackets, praise, or special events tickets. In order to be accepted, the program must have participation from top management on down. Rewards should not be given for participation alone, but as a way of acknowledging progression. Participants should show a definite improvement to receive benefits or they should be acquired through an honest effort and desire to improve.

The result of the research project was to develop a wellness program for Eureka Fire Department using the five components of the Wellness / Fitness Initiative including a peer fitness trainer. It was determined to use the Pack Test as the annual fitness test and provide an incentive based program to reward compliance with the program. The components of the program are listed in Appendix B.

DISCUSSION

The prevalence of cardiovascular illness and deaths and work-inhibiting strains and sprains among firefighters illustrates the need for a comprehensive health and wellness program in every department. The fire service realizes that health and wellness programs benefit individual firefighters and the fire service as a whole; such programs can yield safer and more effective action by first responders to emergencies (NVFC, 2004). The research overwhelmingly emphasized the need to develop a fitness / wellness program for the fire department. The NVFC has developed *Health and Wellness Guide for the Volunteer Fire Service* to provide information and sample programs for the volunteer departments. Of all firefighters in the U.S., seventy-three percent are volunteers. The leading cause of on-duty death among these volunteers is heart attacks. The leading cause of injuries for all firefighters is overexertion and strain (NVFC, 2004). The components necessary to provide a comprehensive fitness program are outlined in numerous documents. The IAFF / IAFC Wellness / Fitness Initiative has five main components: medical; fitness; medical, fitness, injury rehabilitation; behavioral health; and data collection and reporting (IAFF / IAFC, 1997). In addition to the five main components, the Wellness / Fitness Initiative also provided for a Peer Fitness Trainer (PFT). NFPA 1583 was developed to outline the requirements of a fitness program. The health-related fitness program shall include the following components: the assignment of a qualified health and fitness coordinator, a periodic fitness assessment for all members, an exercise training program that is available to all members, education and counseling regarding health promotion for all members a process for collecting and maintaining HRFP data (NFPA 1583, 2000, 2.2). A fitness program should have the following goals: enhance employee health, improve employee performance and productivity, increase employee morale (Davis, 1996). The NVFC outlines the priorities to a

program. . No model plan exists that will work for all departments in all places, but there are model elements and core components that should be implemented, including: regular fitness screenings and medical assessments, fitness program (cardiovascular, strength, and flexibility training), behavioral modification (smoking, hypertension, diet, cholesterol, diabetes), volunteer education, and screening volunteer applicants (NVFC, 2004).

The results of the research indicate the importance of implementing a fitness program. The core components should be medical; fitness; medical, fitness, injury rehabilitation; behavioral health; and data collection and reporting. In addition to the major components, a fitness coordinator or peer fitness trainer should be appointed. The development of a program for Eureka Fire Department should play a pivotal role in providing for a reduction in potential injuries or diseases for firefighters.

The second part of the research was to determine what type of physical fitness test to administer annually. Should the test be fitness based or performance objectives? Physical fitness tests and performance assessments are not the same thing, nor can they be used for the same purposes (Davies, 1995). A fitness test is health-based. People may be classified as unfit because they are overweight, hypertensive or exhibit other negative health factors that may affect performance, yet pass the performance test. Conversely, a person may be highly fit and fail the performance test, because the test is designed to determine if one can perform the necessary essential functions, not to establish a fitness level. Clearly, a physical fitness assessment is different from the task-type Physical Performance Assessment described in 1583. In summary, the fitness test answers the question “What is my physical condition?” and the performance test answers “Can I drag the hose, can I do the job?” They are related, but different, test instruments.

NFPA outlines a physical fitness assessment in NFPA 1583, A.7.3.1 and the Joint Task Force has a sample fitness assessment in the Wellness / Fitness Initiative. The IAFF continues to state its disapproval of time based testing, while the IAFC has supported timed event requirements. In January, 1996, the IAFF called on its 225,000 – plus members to boycott the Combat Challenge, a fitness competition that had promoted time, task-based tests for the fire service. The boycott escalated into violence before the issue finally was resolved in November. Like the union, the IAFC also recently took a stand on firefighter fitness, and early in 1997, announced its support of timed, task-based testing, as well as a "clear relationship between physical fitness and job retention" and "the development or minimum performance standards for fire suppression operations (Ostrow, 1997). The forestry service has recently adopted the "Pack Test" for its annual fitness test. The "Pack Test" is a timed test that involves completing a three-mile walk in forty-five minutes while wearing a forty-five pound weight vest. This new testing method replaced the old step test that was a fitness test. The step test allows some unfit people out on the fire line. Others, more than capable of doing the job safely, can't pass it to save their lives. There's a wide variety in heart rate response to exercise, according to Missoula Technology and Development Center's (MTDC) Brian Sharkey, and the step test under- predicts the fitness of those with high heart rate response. "It will also over predict some people. There are those who are climbing hills everyday and can't pass the step test," (Anderson, 1997).

While there is an ongoing debate on what type of test to administer, the task performance testing is believed to hold up to legal scrutiny better. Under current federal employment legislation, the best prognosis for withstanding legal scrutiny is to use "essential function" testing, replicating as accurately as possible those physical tasks that are critical, arduous and frequently performed, thereby maintaining a fidelity to the job that is uninfluenced by skill or

experience. The benefits of performance-based testing extend beyond a yes or no response, because they can include additional information regarding SCBA tolerance and related phobias that wouldn't otherwise be identified (Davis, 1997). There is a consensus opinion, that a content-validated test, known as a physical performance assessment test, is the only answer. Organizations must comply with the standards set out in NFPA 1500 and 1583, while complying with Americans with Disabilities Act (ADA), Civil Rights Act of 1991, and Age Discrimination in Employment Act 1996 (ADEA), (Day, 1996).

The questionnaires that were returned did not yield any information on testing. None of the responding departments did any type of annual testing. The results of the literature review showed various testing programs. The results revealed that tasked based performance testing will stand up to legal scrutiny and are not biased towards age or gender. The Eureka Fire Department will start using the "Pack Test" to perform annual evaluations on the firefighters.

The third part of the research focused on whether successful completion of the annual fitness assessment should be mandatory or incentive based. Most of the fire service agencies do not support requirements for successful completion of the tests. The NVFC has stated that successful completion of the testing should not be a requirement. The initiative is based on the premise that the program is non-punitive and confidential. If a volunteer firefighter wellness program is to succeed, these same conditions should apply. According to the IAFC-IAFF initiative manual, "all component results are measured against the individual's previous examination and assessments and not against any standard or norm," (NVFC, 2004, p. 11). It was agreed in the IAFF / IAFC Wellness and Fitness Initiative that any performance testing programs be non-punitive, which was defined as no loss of pay and a guided opportunity for remediation.

In order for an incentive based fitness program to be successful, certain components must be instituted. It is important the incentive be considered of value by the members (Walterhouse, 1996). The department head must believe in and sanction the program, as well as provide financial support. The amount of financial backing your department provides will impact the success of your program, but it should not preclude getting started (Lepere, 1997). Eureka Fire Department will initiate an incentive based program and will use a committee to determine what the incentives will be and what accomplishments must be reached in order to receive a benefit.

RECOMMENDATIONS

With the reoccurring statistics of the number of firefighter line of duty deaths that are attributed to poor physical fitness, it is apparent that fire departments need to develop successful physical fitness programs. In order to address all phases of wellness and fitness, programs have to be implemented that address both medical and physical components, including rehabilitation, counseling and compilation of data. The Eureka Fire Department will implement the program was set forth in the IAFF / IAFC Wellness and Fitness Initiative. This program covers all of the components of the initiative and also NFPA 1583. In addition, the department should designate a Peer Fitness Trainer and seek to have him/her complete the IAFF PFT program. The testing method used will be the “Pack Test” and will be performed annually. This test has been used for several years and has held up to legal scrutiny. In addition, this test does not require a high level of technical equipment or a highly specialized tester. To provide for a level of safety, medical physicals should be given prior to allowing participation on the test.

It was decided to use an incentive based program to solicit participation in the program. It was believed that requiring successful completion of the “Pack Test” would have an adverse effect. In order for the incentive program to be successful, it is vital the rewards should be considered of value. The fire department should form a committee to develop the schedule for what level of participation should receive what reward. This committee should continually evaluate the program for effectiveness and assure that all components of the program are followed. It will be very important for the administration of the department to participate and show support for the program.

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APPENDIX A

QUESTIONAIRE

1. Does your department have a physical fitness program?

2. Does your department have fitness equipment or do you provide other means for personnel to access fitness equipment?

3. Do you perform annual physical fitness testing? If so what type of test?

4. Does your department provide annual medical physicals? Is so, what is included in the test?

5. Is your fitness program mandatory or incentive based? If incentives are used, what are they?

APPENDIX B

Category	Components
Medical	• Physical Evaluation • Body Composition Evaluation • Laboratory Tests • Vision Tests • Hearing Evaluations • Spirometry • EKG • Cancer Screening • Immunizations and Infectious Disease Testing • Referrals • Data Collection
Fitness	• Medical Clearance • On Duty Time For Exercise • Equipment and Facilities • Exercise Specialists and Peer Trainers • Fitness Incorporated into Philosophy • Fitness Evaluations (aerobic capabilities, flexibility, muscular strength, muscular endurance) • Fitness Self Assessments • Exercise Prescriptions
Rehabilitation	• Need for Rehabilitation • Rehabilitation as a Priority • Establishment of a Medical Liaison • Physical Therapy Services • Clinical Pathways • Alternate Duty • Injury Prevention Program
Behavioral Health	• Professional Assistance • Nutrition • Tobacco Use Cessation • Employee Assistance Programs • Substance Abuse Intervention • Stress Management • Critical Incident Stress Management • Chaplain Services